

Table 1

Measurements of number and size of egg capsule and egg in relation with the adult size of *Epitonium* species (in mm unless otherwise indicated).

<i>Epitonium</i> species	Egg capsule size length × width (or length only)	Egg diameter (μm)	Capsules/egg mass	Eggs/capsule	Adult size (length)	Source
<i>E. millecostatum</i> (Pease, 1860)	1.4 × 0.87	73	90	149–185 $\bar{x} = 165$ (n = 3)	9.7	Robertson, 1981
<i>E. equinaticosta</i> (d'Orbigny, 1842)	0.9–1.2	98–106 $\bar{x} = 102$ (n = 10)	2–11	28–65 $\bar{x} = 43$ (n = 5)	9.5	Robertson, 1983a
<i>E. albidum</i> (d'Orbigny, 1842)	2.2 × 0.7	68	2,300	248	8–15	Robertson, 1983b
<i>E. rupicola</i> (Kurtz, 1860)	2.5	?	125	400	19.3	McDennott, 1981
<i>E. ulu</i> Pilsbry, 1921	1.76 × 1.32	78	?	558	13	Bell, 1985
<i>E. georgettinum</i> (Kiener, 1839)	1.5 × 1.9	73–78 $\bar{x} = 7.51$ (n = 13)	120–238	122–211 $\bar{x} = 152.5$ (n = 20)	31	this paper

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#### International Commission on Zoological Nomenclature

The following Application was published on 18 December 1998 in Volume 55, Part 4 of the *Bulletin of Zoological Nomenclature*. Comment or advice on this application is invited for publication in the *Bulletin* and should be sent to the Executive Secretary, I.C.Z.N., % The Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).

Case 3036—*Haliotis clathrata* Reeve, 1846 (non Lichtenstein, 1794) and *H. elegans* Philippi, 1844 (Mollusca, Gastropoda): proposed conservation of the specific names.

#### Description of a New Species of the Genus *Phidiana* Gray, 1850 (Nudibranchia: Facelinidae) from Pacific Ocean Waters of Panama

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#### Introduction

In American Pacific waters six species of *Phidiana* Gray, 1850, have been found (Lance, 1962; Bertsch & Ferreira, 1974; Farmer, 1980), although none were reported from the Pacific coast of Panama. During a scientific expedition around some islands belonging to the National Park of Coiba Island, several specimens of a species of *Phidiana* were collected. The color pattern and anatomical features of these specimens allow us to propose a new *Phidiana* species. In this article, the anatomy of the specimens is described and compared with that of other species of the genus.

#### Materials and Methods

The specimens studied in this article were collected during a scientific expedition in February 1997, around the islands belonging to the National Park of Coiba (Panama), located in the Pacific Ocean. The sample locations

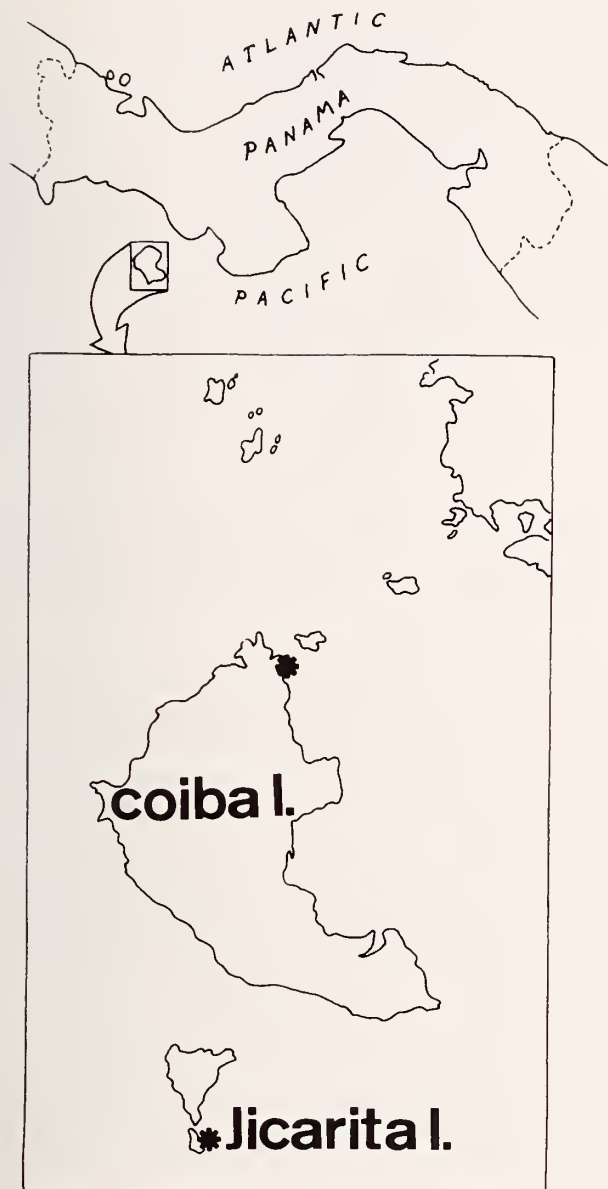


Figure 1

Map of the Coiba islands showing the locations where the specimens were collected (\*).

where the specimens were collected are illustrated in Figure 1. The specimens were fixed and preserved in 4% formaldehyde.

#### Systematic Description

*Phidiana mariadelmarae* García & Troncoso, sp. nov.  
(Figures 2–5)

**Type material:** Holotype, length 16 mm, collected under rocks in the intertidal zone of Coiba Island, Panama (7

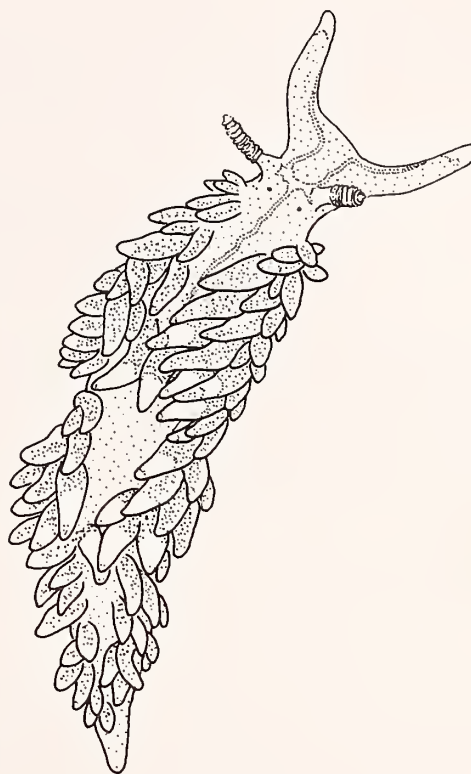


Figure 2

*Phidiana mariadelmarae* García & Troncoso, sp. nov. External view. The holotype.

February 1997) deposited in Museo Nacional de Ciencias Naturales de Madrid (Spain) with the code number 15.05/27853. Paratype, one specimen of 17 mm in length, collected under rocks in the intertidal zone of Jicarita Island, Panama (9 February 1997) and two specimens (9 and 17 mm in length), collected at the same station (14 February 1997), deposited in the same museum with the code numbers 15.05/27854 and 15.05/30340.

**Additional material examined:** Two specimens, 9 and



Figure 3

*Phidiana mariadelmarae* García & Troncoso, sp. nov. A. Jaws. B. Detail of the masticatory border. Specimens 9 and 13 mm.



Figure 4

*Phidiana mariadelmarae* García & Troncoso, sp. nov. Radular tooth. Specimens 9 and 13 mm.

13 mm in length, collected under rocks in the intertidal zone of Jicarita Island, Panama (9 and 14 February 1997) were dissected.

**Etymology:** The name of this species, *mariadelmarae*, is derived from the name of the wife and eldest daughter of the first author, María del Mar.

**External anatomy (Figure 2):** The body is elongated, length was 9, 11, 13, 16 and two of 17 mm, oral tentacles long and cylindrical, rhinophores slightly shorter, and the lower one-third smooth, and two-thirds of the top with 12 annulations. The cerata are two groups of oblique rows, anterior group seven rows, posterior eight rows. Each row has two to seven cerata, the outer shorter than the inner. The genital papilla is on the right side of the body, between the fifth and sixth row of the anterior cerata group. The tail and foot are rounded, propodial tentacles absent.

**Coloration.** The ground color is orange, slightly darker in the cephalic region. The esophagus, jaws, and subradular membrane are rose colored, as seen through the body wall. The apex of the oral tentacles and apical third of the rhinophores are white. The eyes are clearly visible behind the base of the rhinophores. A fine white longitudinal line extends mid-dorsally from the anterior end of the cardiac region to the level of the rhinophoral base, where it bifurcates. Each branch extends along one side of the head to the apex of the oral tentacle. These lines vary in strength and breakage, depending on the specimen. Thus, in one specimen of 17 mm length, in which the orange coloration of the body is darker than in the other specimens, the white lines are almost absent.

The cerata are hyaline orange. Their orange-brown digestive gland branches are visible through the translucent tissue. The cnidosac color is lighter than the rest of the cerata. On the outer surface of the cerata, located in the cardiac region, there is a white band whose extension on each cerata varies according to specimen. The number of cerata with bands also varies, the most numerous being the specimen that lacks white dorsal lines.

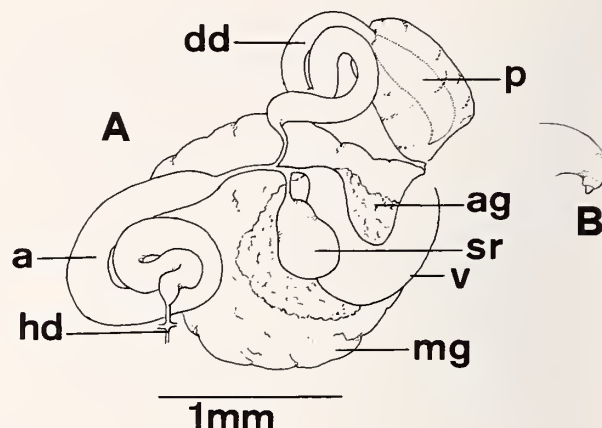


Figure 5

*Phidiana mariadelmarae* García & Troncoso, sp. nov. A. Reproductive system. B. Detail of the penis. Abbreviations: a, ampulla; ag, albumen gland; dd, deferent duct; hd, hermaphroditic duct; mg, mucus gland; p, penis; sr, seminal receptacle; v, vagina. Specimens 9 and 13 mm.

**Internal anatomy:** The jaws (Figure 3) are rose colored, ovate, and strongly convex on the outer surface. The cutting border has a single row with 22 hooked denticles in a specimen of 11 mm in length. The masticatory border of a specimen of 13 mm only has 15 rounded and worn denticles.

The subradular membrane and esophagus are rose colored. The radular formula of a 13 mm long specimen is  $20 \times 0.1.0$ . The teeth have a large median cusp with three to four hooked denticles on either side, and five hooked lateral cusps. Outer and inner lateral cusps are smaller than median cusps (Figure 4).

The reproductive system is illustrated in Figure 5. The hermaphroditic duct widens into a convoluted ampulla, narrowing at its distal end, bifurcating into a deferent duct and a female duct. The deferent duct enlarges into a long and coiled prostatic duct, similar to the ampulla in length and thickness, which connects with a penis enclosed in a muscular and conical penial papilla. The penis is cylindrical and armed with a curved and pointed apical spine. The common female duct is short and opens into the vaginal vestibule. A short and narrow duct connects the internal end of the vagina with the seminal receptacle.

#### Discussion

Although the genus *Phidiana* and other related genera have been broadly discussed (Miller, 1974; Gosliner, 1979; Rudman, 1980), our specimens clearly belong to genus *Phidiana*. They have long oral tentacles; the rhinophores are lamellate; the foot is anteriorly rounded; the jaws have a masticatory border with a row of teeth; the radular teeth are provided with lateral denticles on a central cusp; and the penis is ornamented with a spine. Miller



(1974) considered the presence of cerata disposed in parallel rows as a generic characteristic of *Phidiana*. This feature is present in *P. mariadelmarae*.

The coloration of *P. mariadelmarae* differs from that of the majority of *Phidiana* species (Edmunds, 1964; MacFarland, 1966; Rudman, 1980; Willan, 1987). Only *P. lascrucensis* Bertsch & Ferreira, 1974, and *P. pegasus* Willan, 1987, have an orange body color similar to that of *P. mariadelmarae*. However, *P. pegasus* has the rhinophores ornamented by pustules and the foot is enlarged anteriorly with two tentacles, approximately equal in length to the rhinophores (Willan, 1987), whereas in *P. mariadelmarae* the rhinophores are encircled by annulations, and the anterior border of the foot lacks elongated propodial tentacles.

The coloration of *P. mariadelmarae* differs from that of *P. lascrucensis* because this species lacks mid-dorsal longitudinal white lines at the cephalic region, and the dorsal surface of the notum has numerous white spots.

Internally, the radular teeth of *P. mariadelmarae* are similar to those of *P. lascrucensis*. However, they can be differentiated because on the masticatory border of the jaws, *P. lascrucensis* has two rows of denticles, with 23–24 in the first row and five to six in the second. However, *P. mariadelmarae* has only one row with 15–22 denticles. The shape of the denticles differs from other species of *Phidiana*. The denticles in other species are described as rounded or irregular denticles (MacFarland, 1966; Rudman, 1980), whereas in *P. mariadelmarae* they are hooked and pointed.

*P. lynceus* Bergh, 1867, is an Atlantic species with a mid-dorsal white line bifurcating at the level of the rhinophores as in *P. mariadelmarae*. Both species have a similar reproductive system. However, *P. lynceus* has a line of bright vermilion red that runs from one oral tentacle to the other and the mid-dorsal white line extends from the tail to the rhinophores (Edmunds, 1964).

The reproductive system of *P. mariadelmarae* coin-

cides with that of *P. lascrucensis* since in both species the penis has a curved apex with a spine at the tip. However, because this system was not described in *P. lascrucensis*, is not possible to compare them.

#### Acknowledgments

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